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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/667,770	09/22/2000	Mitsuaki Komino	PM 272798 EL00006CDC	8174

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EXAMINER

ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 08/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/667,770

Applicant(s)

KOMINO ET AL.

Examiner

Rudy Zervigon

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-4, 7, 11-15, 21, 23-25, 27 and 29-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11, 12, 23, 24, 32-36, 38, 39 and 42-45 is/are allowed.
- 6) ☒ Claim(s) 2, 14, 21, 25, 29-31, 37, 40 and 41 is/are rejected.
- 7) ☒ Claim(s) 3, 4, 7, 13, 15 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign mentioned in the description: "gas grooves 200" (page 30, lines 3, 7, 33...) is not shown in any of "Figures 9A through 9D". Correction is required.

Claim Objections

1. Claim 21 is objected to because of the following informalities: Claim 21 depends from claim 20. Claim 20 is cancelled by amendment on page 1 of paper 9. Appropriate correction is required.
2. Claim 14 is objected to because of the following informalities: Claim 14 may depend from claim 1. Claim 1 is cancelled by amendment on page 1 of paper 9. Appropriate correction is required.

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Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "soft", "softened", and "low" are relative terms rendering the claim indefinite.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2, 14, 25, 29, 30, 31, 37, 40, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heimanson et al (USPat. 5,775,416) in view of Gilchrist et al (USPat. 5,846,375). Heimanson teaches and electrode structure with:
2. an electrode unit and placement table (Figure 1) having a heater unit (28) therein; a cooling block (34) joined to the electrode unit and having a cooling jacket (38) which cools said electrode unit; a labyrinth heat transfer space (50) provided on at least one of opposite surfaces of said electrode unit (Figure 1) and said cooling block; and electrode-side heat transfer gas supply means (92, 72, 76, 84) for supplying a heat transfer gas to said labyrinth heat transfer space. Heimanson further teaches a center of the placement table held by a column (transmission column of 108), where the column is shown connected to the cooling block via a heat conducting member (56). Heimanson further teaches a chuck (20/56, Figure 2; column 3, line 61 – column 4, line 3) and chuck-side heat transfer gas supply (30, Fig.1). Heimanson further teaches pressure sensors (68, 78; Figure 1) and controller (92) for pressure setting (column 4, lines 16-35).

Heimanson et al does not teach a heat transfer space (50) formed by a concentric or spiral groove. Further, Heimanson et al does not teach a high-frequency source applying a high-frequency voltage to the electrode structure.

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Gilchrist teaches a similar electrode unit (15, Figure 1) and specifically teaches a labyrinth transfer space (32A-D; Figure 1) formed by concentric (Figure 2, 5) grooves. The heat transfer space is divided into concentric zones (32A-D; Figure 1) controllable on an individual basis (column 4, lines 35-45). Further, Gilchrist teaches a high-frequency source (30) applying a high-frequency voltage to the electrode structure (14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Heimanson to implement the Gilchrist transfer space formed by concentric grooves and implement the Gilchrist high-frequency source applying a high-frequency voltage to the electrode structure.

Motivation for Heimanson to implement the Gilchrist transfer space formed by concentric grooves is drawn to the benefit gained from Gilchrist: "alternative configurations are possible depending on the shape of the wafer or other workpiece, and the scope and degree of area specific temperature control that may be desired for a particular etching or deposition process." (column 4, lines 49-54).

Motivation for Heimanson to implement the Gilchrist high-frequency source applying a high-frequency voltage to the electrode structure is drawn to the level of ordinary skill in the art to increase plasma ionization.

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Allowable Subject Matter

3. Claims 11, 12, 23, 24, 32-36, 38, 39, and 42-45 are allowed.

4. The following is a statement of reasons for the indication of allowable subject matter:
The above claims are allowed because each contain at least one of the novel components not taught or suggested in the prior art including:

“heat resistant metal seal members” – The prior art teaches polymeric seal members, for example in Heimanson et al (44, 46; column 3, lines 37-49).

“an aluminum nitride (AlN) thermally insulating member provided between said electrode unit and said cooling block” – None of the prior art suggests such a tiered heat transfer space with an AlN block separating the space.

“a contact rate of a joining surface of a member, which is joined to define said heat transfer space, is set to fall within a range from 40% to 80%” (specification p.30) – None of the prior art suggests a contact rate as described.

“the center of said electrode unit is held by a hollow column, and a gas blower means is provided in said column” – None of the prior art teaches such a column and forced convection.

5. Claims 3, 4, 7, 13, 15, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 21 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S.Pat. 5,633,073; 5,382,311; 5,177,878; 4,949,783; 4,771,730; 5,320,982; 4,565,601; 5,665,166; 5,255,153; 5,625,526; 5,567,267; 5,376,213
2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (703) 305-1351. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official after final fax phone number for the 1763 art unit is (703) 872-9311. The official before final fax phone number for the 1763 art unit is (703) 872-9310. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (703) 308-0661. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (703) 308-1633.


GREGORY MILLS
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